Advanced Image Processing (IT507)

Assignment 4

March 15, 2021

1 Instructions

- Implement the following problems in Python or MATLAB.
- **Do not copy code from any source.**
- Prepare a report based on the theory and observations (one report per group).
- Submit the report (PDF format) in the Google Classroom within the deadline.
- The assignments will be evaluated on Monday from 4:30 PM to 6:30 PM.

2 Problems

1. Find out the difference between averaging operation and weighted averaging (higher weight to center pixel) operation on Fig. 1 by applying spatial filtering. For this purpose, convolve the image with 9×9 masks (averaging mask and weighted averaging mask).

Figure 1

2. Consider the image of Fig.1 and apply unsharp masking and highboost filtering to enhance the edges of the image. Consider a row of the original image and plot the intensity values. This kind of plot is known as intensity profile of that row. Plot similar intensity profiles (consider the same row) for the blurred image, unsharp mask, sharpened image, and the high-boost filtered image. Explain your observation.

3. Smooth the image of Fig.1 by using Biltaeral filtering. Compare the result with average filtering and weighted average filtering. Which result is better?–Explain your understanding.

4. Consider the image of Fig.2 and process it to bring out more skeletal detail. (You may use combination of sharpening and smoothing operations).

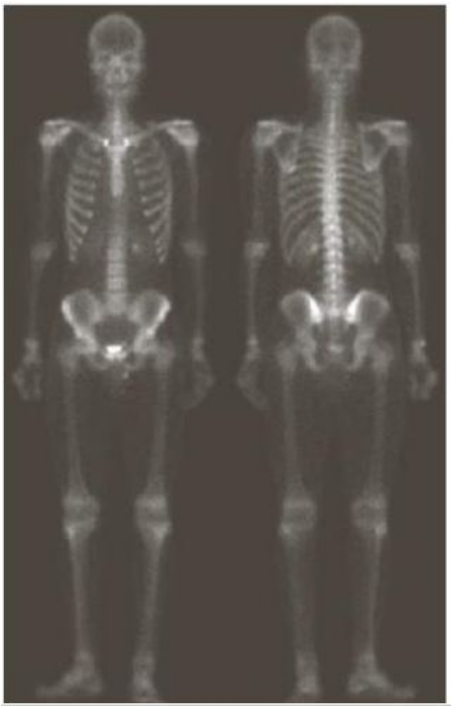

Figure 2